DXRenderFarm : A Xgrid based Render Farm for Maya®

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1. INTRODUCTION

DXRenderFarm is distributed rendering software for Maya® on Mac OS X, build upon Xgrid, Apple’s grid computing technology. Since it was originally developed for computer graphics courses at DXARTS, University of Washington, it mainly targets the use in the open environment where a number of the students need to share the computational resources to render their CG works and effective system administration is required, and where all those computers must be available to any user at the same time.

2. FEATURES

DXRenderFarm has several features for the effective use in a public environment as flowing.

2.1 Web-based Interface

DXRenderFarm offers web-browser interface. Users can easily access the render farm without installing any software. Also it supports HTTPS security so that users can safely access the render farm.

2.2 User Account Administration

All the users must have their accounts to access DXRenderFarm. Administrators can configure the maximum numbers of rendering jobs, the granularity to divide the rendering jobs to a number of small tasks, the job priority etc., for each individual user.

2.3 Rendering Job Scheduler

So to avoid one user to occupy the render farm, DXRenderFarm supports round-robin scheduling. It picks up the next frames to render, one by one in turn, from all the rendering requests currently running. Yet some users can have more chances to render their frames, depending on the given priority.

2.4 Background Rendering

Thanks to Xgrid, Those computers that belong to DXRenderFarm can process rendering background with lower priority. Users can still use the computers for their own purposes.

2.5 Automatic Image Output Result Check

Since those computers that belong to DXRenderFarm can also be available to the users for other purposes, there are more chances for system troubles, i.e. unintentional reboot. To facilitate the detection of errors caused by system troubles, DXRenderFarm automatically checks the existence of the entire image files output from Maya right after rendering finished. Users can easily check the results by checking the job status page.

2.6 Error Frame Reposting

When DXRenderFarm detects image output errors, the users can repost only those error frames to be rendered again, so that they don’t have to start over the whole rendering process.

3. SYSTEM ARCHITECTURE

The system architecture is shown in the figure3.1. Web Server is in charge of managing the render farm, except distribution of the rendering tasks to Xgrid agents. Web Server and Xgrid Agents must share the file server where Maya projects reside.

4. CURRENT PROJECT STATUS

DXRenderFarm is already working at DXARTS, University of Washington, with 25 CPUs, 47GHz in Total and the addition of another 20 CPUs is currently planned. It is under a heavy use by the students in the computer graphics courses and the other registered users.

DXRenderFarm is now in preparation for its release as open source software. To get more information and public beta source/binary, contact the author at nnishino@u.washington.edu,

5. REFERENCES


1 Maya is a registered trademark of Silicon Graphics, Inc. in the united states and/or other countries worldwide, exclusively used by Alias Systems, a division of Silicon Graphics Limited.